plurality of hollow disks, with an outer diameter of the stirring rotor being equal to the outer diameter of the hollow disks, and with the outer diameter of the support member at the outlet side for a liquid feed being smaller than the outer diameter of the stirring rotor. See claim 1; note also claims 2 and 7.

In addition, it is respectfully submitted that these references would have neither taught nor would have suggested such reactor, having features as discussed previously, and furthermore wherein the stirring rotor is without any rotating shaft at a position of a rotating center axis (note claims 1, 2 and 7); and/or wherein scraping vanes are provided on the support member on the vessel inner end wall-facing side (see claims 1, 2 and 7); and wherein the stirring rotor within the vessel is provided with a plurality of stirring blocks having structure based upon the viscosity of the liquid feed (note claim 7).

The invention as claimed in the above-identified application is directed to a reactor for producing, e.g., a high molecular weight polyester. Applicants have found that by, inter alia, providing a support member of the stirring rotor, at the end of the outlet side thereof, having an outer diameter which is smaller than the outer diameter of the stirring rotor, with the outer diameter of the stirring rotor being equal to the outer diameter of the plurality of hollow disks thereof, material having a high viscosity can easily be passed through the outlet, so that the reactor can easily and effectively be utilized in forming a high viscosity product. See page 27, lines 10-15, of Applicants' specification.

Applicants have further found that by providing stirring blocks having a structure based upon viscosity of the material at a specific location of a respective stirring block, passing of the material through the reactor can easily and effectively

be accomplished, and stirring of the material can effectively and efficiently be achieved, providing a product with a desired high degree of polymerization. In particular, Applicants recognize that in this reactor (that is, the third reactor according to the disclosure in the above-identified application), viscosity of the material increases, from a relatively low viscosity to a high viscosity; and the stirring rotor structure is modified along the length of the reactor recognizing this change in viscosity. This is accomplished, according to the present invention, through the stirring rotor within the vessel being divided into a plurality of stirring blocks, having structure based upon the viscosity of the liquid feed thereto, as discussed in the disclosure of the above-identified application.

Moreover, using the reactor according to the present invention, the inner end wall surfaces of the vessel can be substantially self-cleaned, to prevent the product from being deposited on and remaining on the surfaces of the reactor.

Rothert, et al. discloses an apparatus and method for carrying out mixing, reacting and propelling of flowable materials. The apparatus includes a rotary carrier in the form of a cage having a row of substantially planar discoidal propulsion members mounted thereon to rotate therewith, the centers of the discoidal members being substantially at the axis of rotation of the carrier so that each discoidal member symmetrically surrounds that axis. Each of the discoidal members is inclined somewhat away from being normal or perpendicular in relation to the axis of rotation, so that one point, hereinafter designated the "trailing point" of the periphery of that member, is closer to the intake end of the apparatus than any other point. The trailing points of the successive members are disposed along a line which is generally helicoidal, with the axis of the helicoidal line being substantially coaxial

with the axis of rotation of the carrier. Note the paragraph bridging columns 1 and 2 of this patent. This patent discloses that the discoidal members are annular discs, having a continuous and unobstructed central opening. See column 2, lines 20-29. Note also column 2, lines 48-50 and 55-58. This patent discloses, as an especially advantageous embodiment, use of a screw-shaped stripper provided bearing against a fixed opposing surface on the end wall on the outlet side of the reactor housing, this stripper continuously removing material which has been forwarded to the outlet end from the end wall opposing surface, the last annular disc in this embodiment being preferably provided as the only annular disc which lacks a tilt, thus being perpendicular to the rotational axis. Note column 3, lines 29-39. See also column 3, lines 53-57. Note further column 3, lines 41-51; column 5, lines 19-28; and the paragraph bridging columns 6 and 7.

It is respectfully submitted that Rothert, et al. would have neither taught nor would have suggested such apparatus as in the present claims, including, inter alia, wherein the outer diameter of the support member (at, e.g., the outlet end) is smaller than the outer diameter of the stirring rotor, among other features of the presently claimed apparatus.

The contention by the Examiner on page 3 of the Office Action mailed September 16, 2004, that the outer diameter of the another support member 112 is smaller than the outer diameter of the stirring rotor 26, in Rothert, et al., is noted. However, it is respectfully submitted that the member 112 in Rothert, et al. is a stub shaft, not a support member as in the present claims. It is respectfully submitted that the screw-shaped stripper 221 as described in Rothert, et al. corresponds to the support member as in the present claims; however, the screw-shaped stripper 221 in

Rothert, et al. does not have a disk shape, contrary to the present claims which recite support members having a disc shape. Thus, contrary to the conclusion by the Examiner, it is respectfully submitted that Rothert, et al. does not disclose, nor would have suggested, aspects of the present invention, including, inter alia, the stirring rotor provided with support members having a disk shape.

In Rothert, et al., the screw-shaped stripper 221, which has a hollow shape, can scrape material adhered to the inner end side of the vessel so that the outer diameter of the screw shaped stripper is not required to be small. In comparison, according to the present invention, since the support member has a disk shape, it is necessary to transfer material scraped from the end section of the vessel to the outlet. For this purpose, according to the present invention the outer diameter of the support member on the outlet side is made smaller than the outer diameter of the stirring rotor.

Contrary to the conclusion by the Examiner, it is respectfully submitted that Rothert, et al. would have neither taught nor would have suggested aspects of the present invention, including, inter alia, the stirring rotor provided with the support members having a disk shape, and/or function/advantages thereof.

On page 6 of the Office Action mailed March 8, 2005, the Examiner characterizes Rothert, et al. as describing a stub shaft including two portions, an elongated shaft portion designated as element 112 in Fig. 1 and an end disc-shaped portion of larger diameter than the shaft portion 112, unlabeled in Fig. 1 but designated as element 112' in Fig. 10. Based on this, the Examiner concludes that the apparatus of Rothert, et al. structurally meets the claimed structure including a

support 112' having a disc shape, with scraping veins 121 or 121' on the support member 112'.

However, attention is respectfully directed to the description of Fig. 10 in the paragraph bridging columns 7 and 8 of Rothert, et al. Therein, it is described that the structure 26' is built up of two stub-shafts 110' and 112', in addition to longitudinal stringers, a stripper 121' and inclined discs and a non-inclined disc. To emphasize, Rothert et al. discloses two stub-shafts. It is respectfully submitted that this disclosure of structure in Rothert et al. would neither taught nor would have suggested, and in fact would have taught away from, the structure claimed in the above-identified application, including support members, having a disc shape at both ends of the stirring rotor, with connecting support rods between the support members, and wherein the stirring rotor is without any rotating shaft of a position of a rotating center axis.

It is respectfully submitted that the additional teachings of Hohlbaum would not have rectified the deficiencies of Rothert, et al., such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Hohlbaum discloses apparatus for contacting materials, and is particularly concerned with a slurry/liquid contactor. See column 1, lines 5-10. The apparatus includes a drum having disks so as to divide the drum into compartments in the drum interior, with annular passages for movement of phases of the treated material from compartment to compartment. The structure includes at least one blade which is carried by the rotor, which penetrates into the annular passages and which is operable to maintain the passages at least partly clear of stationary solids. This patent discloses that the blade may be in the form of a plough extending from the

discs and into the annular passage. Note the paragraph bridging columns 1 and 2 of this patent. See also column 2, lines 61-64; column 3, lines 27-29; and column 4, lines 3-10.

Initially, it is noted that Hohlbaum is primarily concerned with a solid/liquid contactor including a drum with annular passages between the drum periphery and compartment forming discs. It is respectfully submitted that one of ordinary skill in the art concerned with in Rothert, et al. would not have looked to the teachings of Hohlbaum, directed to different technologies and different functions.

In any event, even assuming, arguendo, that the teachings of Rothert, et al. and Hohlbaum were properly combinable, such combined teachings would have neither disclosed nor would have suggested the presently claimed reactor, including, inter alia, the stirring rotor provided with the support members having a disk shape, particularly wherein the outer diameter of the support member at the outlet side is smaller than the outer diameter of the stirring rotor, and advantages achieved by the present invention due thereto.

On pages 6 and 7 of the Office Action mailed March 8, 2005, the Examiner contends that both Rothert, et al. and Hohlbaum are concerned with the particular problem of providing thorough mixing of a flowable material. The Examiner points to specific language in Rothert, et al. as disclosing such mixing.

However, while Rothert, et al. may be directed to mixing and forwarding of flowable material, it is emphasized that Hohlbaum is directed to apparatus for contacting materials, particularly concerned with a slurry/liquid contactor. Thus, this patent is directed to a contactor in which a solids phase and a carrier liquid are separately introduced and a slurry is formed within the contactor. It is respectfully

submitted that such mixing of a solid and liquid is different from the mixing as in Rothert, et al., and/or mixing as in the present invention; and thus it is respectfully submitted that Hohlbaum is not analogous art with respect to, e.g., the disclosure of Rothert, et al. While the Examiner contends that both Rothert, et al. and Hohlbaum "are concerned with the particular problem of providing thorough mixing of a flowable material, it is respectfully suggested that this is too broad of a characterization of the teachings of Hohlbaum, which is concerned with a slurry (that is, including a solid).

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Antonelli, Terry, Stout & Kraus, LLP Deposit Account No. 01-2135 (Docket No. 500.36898VX1), and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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